

**Red River NWR
Fisheries Report
U.S. Fish and Wildlife Service
Baton Rouge Fish and Wildlife Conservation Office**

Introduction

Cedric Doolittle and Kayla Dibenedetto of the USFWS's Baton Rouge Fish and Wildlife Conservation Office (FWCO) visited Red River National Wildlife Refuge, Louisiana on September 1-2, 2009, to collect information about fish populations.

Materials and Methods

All fish samples were collected with a boat mounted electrofishing apparatus during daylight hours. A gasoline-powered generator provided pulsed direct current (DC). No fish were netted and measured. However, an audio device was used to record information regarding the quantity and species of fish. Traditional electrofishing techniques may be biased because sometimes efforts to capture larger fish or certain species can occur and omit others. Largemouth bass (LMB) were classified into the following four size categories: young of the year (YOY or 1 to 3 inches), 4 to 8 inches, 10 to 12 inches, and greater than or equal to 14 inches. Only bluegill and crappie that were spawned in 2009 (YOY) were also given a size category. A handheld YSI instrument was used at random locations to measure the following parameters of the water at three different depths: temperature ($^{\circ}\text{C}$), pH, conductivity (mS/cm), turbidity (NTU), and dissolved oxygen (mg/l).

Results and Discussion

Eagle Bend Lake

Eagle Bend, an oxbow lake (approximately 130 acres), within the Headquarters Unit was electrofished for a total of 3600 seconds. The following largemouth bass numbers and size categories were encountered: 37 YOY, 23 LMB that were 4 to 8 inches, 7 LMB that were 10 to 12 inches, and 4 LMB that were greater than or equal to 14 inches (Figure 1). Other species observed were: 3 YOY bluegill, 7 bluegill, 1 bowfin, 10 buffalo, 5 common carp, 1 crappie, 28 gar, 1 redear sunfish, 1432 shad, and 51 silverside.

The electrofishing results indicated that there were young bass present but very few bream (bluegill and redear sunfish) and larger LMB. The lake is closed to fishing and angling related mortality is not a factor. However, other environmental and ecological factors such as species competition and river influence may be the reason for the lack of more desirable sportfish. The less desirable fish such as gar compete with largemouth bass for prey (Bonds et al. 2005). Gar will take advantage of the available food sources and consume small sportfish (Goodwin et al. 2003). The low numbers of bluegill, redear sunfish, and largemouth bass may also be the result of annual and or biannual influence from the Red River. Periodic river influences make it very difficult to manage a sport

fishery and have an efficient hatchery stocking. Typically, river overflows can provide a lake with brood fish, which will spawn successfully if suitable habitat exists. Although adults and young of the year of desired species have the chance to enter or leave Eagle Bend, undesired fish also have the same opportunity.

Water Quality data was recorded at surface, middle, and bottom depths at 2 locations. Average measurements at the surface for temperature, pH, conductivity, turbidity, and dissolved oxygen (DO) were: 28°C, pH 6.8, 0.454 mS/cm, 3.7 NTU, and 10.33 mg/l, respectively. Average measurements at the middle layer were: 27°C, pH 6.7, mS/cm, 5.1 NTU, and 9.31 mg/l. Average measurements at the bottom layer were: 25°C, pH 6.6, 0.458 mS/cm, 28.1 NTU, and 4.86 mg/l. Overall, the water quality was within the expected ranges to support a sport fishery.

The physical habitat regarding cover and depth was conducive to supporting a fishery. There was structure observed within the lake and along the perimeter of the lake. The average depth was five feet and the deepest areas were more than six feet. Based on tree markings, Eagle bend Lake lost three feet or more prior to the survey. However, it is assumed that the lake does not degrade to shallow levels that are unfavorable for fish. In the future, the refuge staff will provide the Baton Rouge Fish and Wildlife Conservation Office with more information regarding the frequency of river overflows and lake water levels.

Yates Lake

Yates Lake is approximately 16 acres and was electrofished for a total of 1200 seconds. The following fish were encountered: 69 bluegill, 3 black bullhead, 2 carpsucker, 6 gar, 6 golden shiner, 1 green sunfish, 14 red sunfish, 10 shad, and 12 top minnow. Catch per unit effort (CPUE) for bluegill and red sunfish were 207 and 42 fish per hour, respectively (Figure 2). No largemouth bass were observed and gar appear to be the top predator in the lake.

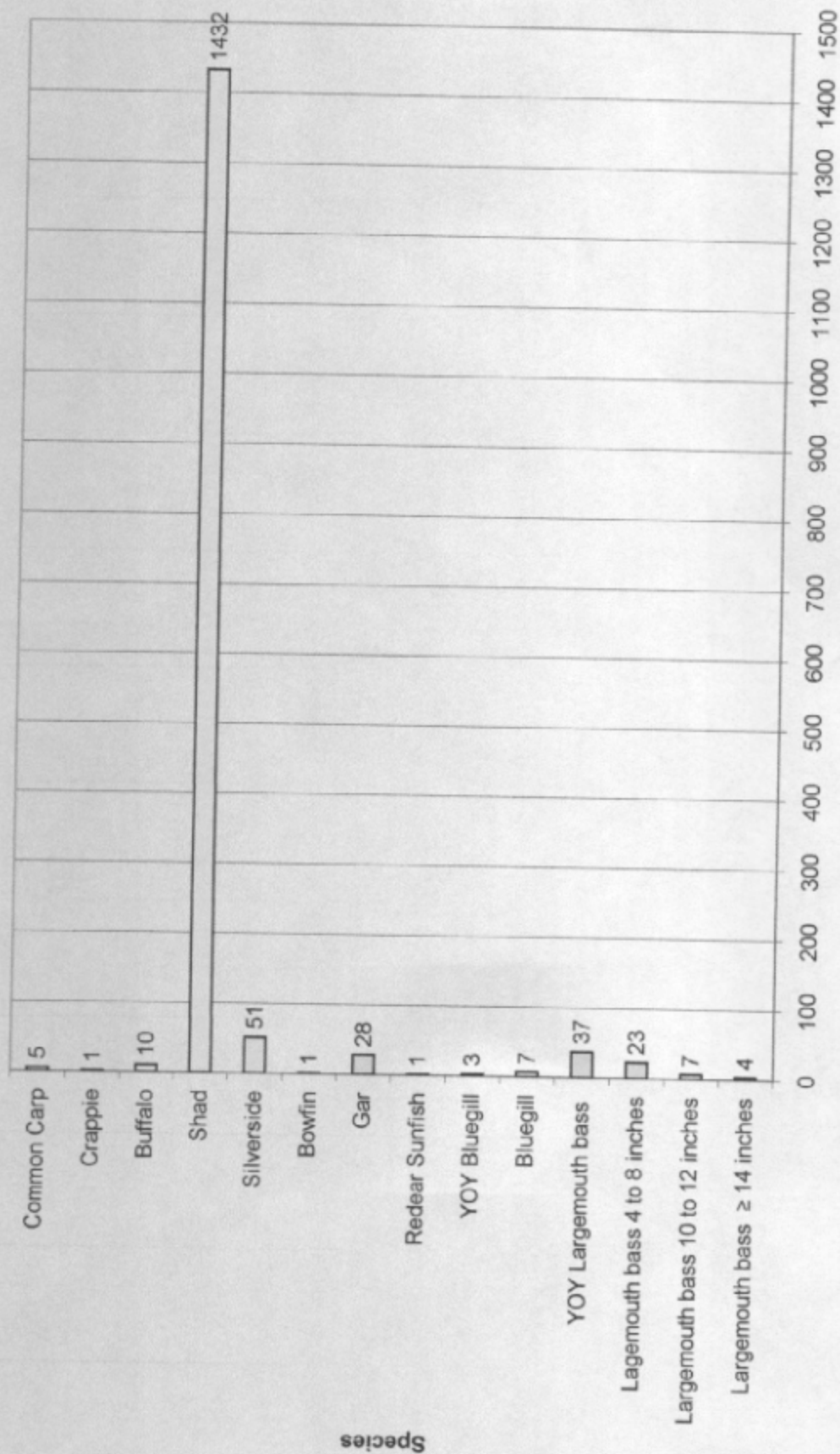
Yates has excessive aquatic vegetation that covers virtually 100 percent of the lake. Aquatic plants maintained at an appropriate coverage can be beneficial to fish and wildlife by being a food source, providing cover for small fish, and attracting insects and other small organisms. Conversely, dense growths that exceed 25 percent can impede recreation and prove detrimental to aquatic life (Helfrich et al. 2009). The generally accepted range of vegetation coverage is 15-20 percent to promote a healthy sport fishery and or pond ecology. The dominant aquatic plant observed was coontail. Navigation was difficult during the survey and the deepest areas of Yates were approximately two to three feet deep. Shallow ponds and lakes typically provide favorable conditions for the excessive growth of plants. Yates has a man-made dam but it is not functional. In the vicinity of the structure, water was observed leaking slowly from the pool into a nearby creek. Although the lake was shallow during the survey, it is believed that depths are somewhat greater when the river floods the lake. As aforementioned, this may be beneficial to fish populations but it also presents challenges regarding fisheries management.

Since Yates Lake was very shallow and there were no significant habitat differences in the lake, water quality data was recorded at the surface at only one location. Measurements for temperature, pH, conductivity, turbidity, and dissolved oxygen (DO) were: 22°C, pH 7.1, 0.433 mS/cm, 18.5 NTU, and 2.01 mg/l, respectively. The generally accepted minimum range of DO that will support a large population of different fish species is from 4 to 5 mg/l. Low dissolved oxygen adversely affects species diversity and population size. LMB and bluegill avoid areas with DO levels less than 3 mg/l but can tolerate 1.4 mg/l at 25 °C (Brunson et al. 2000 and Tidwell et al. 2000).

Recommendations

No hatchery stockings are recommended for the lakes because of the lack of information, including periodic water quality measurements. The Baton Rouge FWCO recommends that the refuge staff monitor water levels and the frequency of river influence in Eagle Bend and Yates. Red River NWR staff will evaluate the man-made dam in Yates Lake and consider the installation of a new water control structure. Chemical treatments to control the excessive aquatic vegetation in Yates should also be considered. FWCO staff will schedule follow-up visits as necessary to monitor the progress of the lake modifications or renovations. Additionally, after accessibility is improved to other areas on the refuge that may have fisheries management potential, FWCO staff will visit them to collect baseline information.

Eagle Bend Lake



Total Number
Time = 3600 sec
Figure 1

Yates Lake

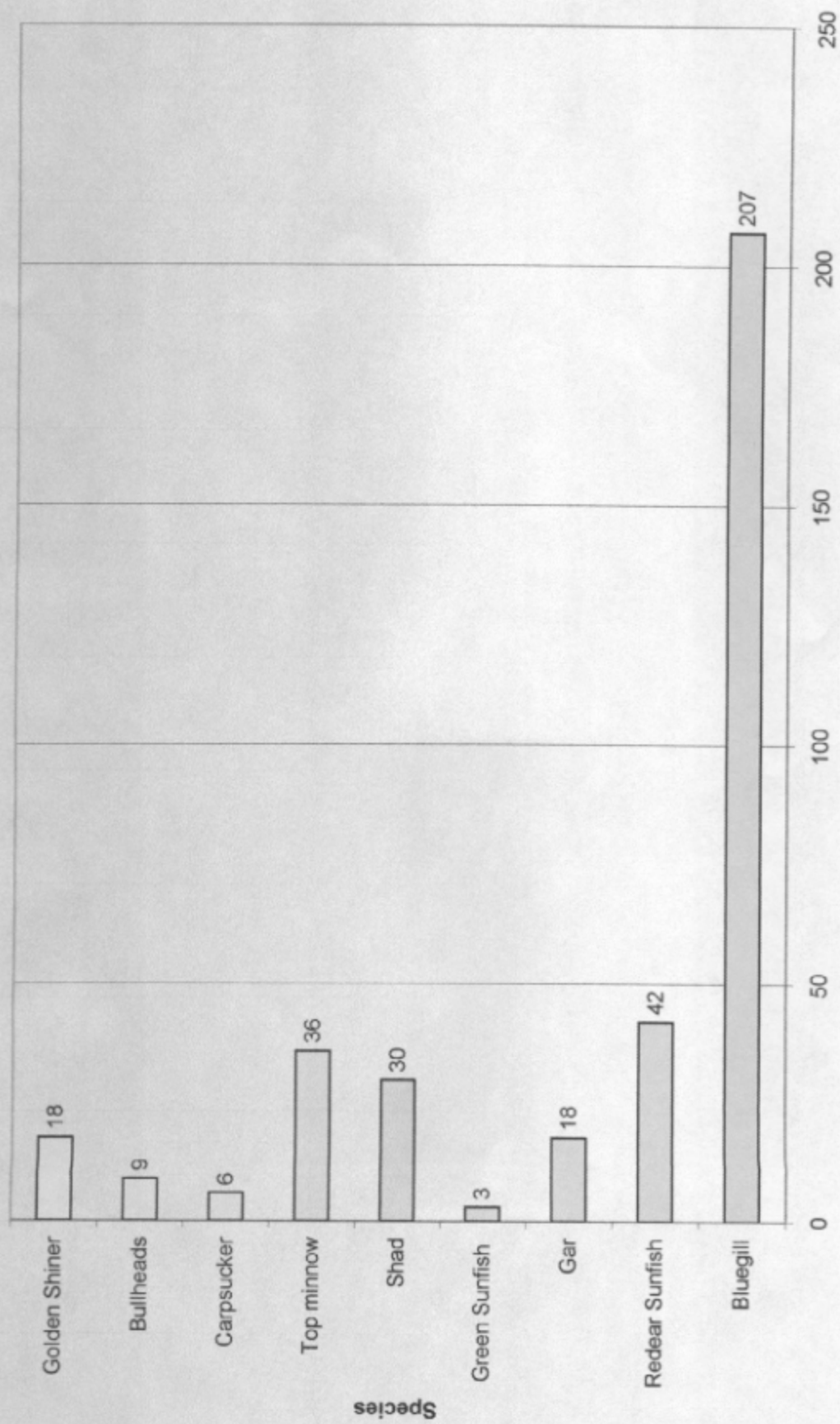


Figure 2

References

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